The Post-merger Performance of Listed Companies in China

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Abstract

Instead of using share-price analysis on post-merger performance as most other researchers do in China, we measured post-acquisition operation performance by reported financial and accounting data. That is because although abnormal return methodology is widely adopted in the measurement of post-merger performance, the applicability of the method is affected by some factors. One of the important points is whether the stock market is efficient. That is still a problem need to be probed in China.

The other method to measure performance change is analyzing financial and accounting data. The positive research by Chen Xiao (1999) showed that the income information of Chinese listed companies is strongly informative. Any income strategies are short-term and performance will be reflected in financial reports given a long enough period. This study uses this method to test changes of performance after takeovers.

This paper is structured as follows. First, the sample selection is examined, and the factor analysis methodology is developed. The methodology is followed by analysis and the results of empirical testing of different aspects of post-merger performance in Chinese listed companies. The paper closes with a discussion of the results and conclusions.

The results indicate that:

First, in the year of the takeovers and the first year after takeovers, the performance of merging firms increases in general, but in the following years, it decreases. In the third year after the takeovers, the average of F^2-F^{-1} is positive, but the significant level is low.

Second, the proportion of shares held by the biggest shareholders is positively related to the performance in the year of takeovers, but the relationship between the percentage and the performance in the long run is not evident.

Third, the performance of firms which state-owned shares account for the most part are better than the firms in other equity structure in short term, but there are no significant differences between the two kinds of firms in the long run.

Key words: Listed firms, Post-merger performance, Abnormal return methodology

1. Introduction

Researchers have made numerous studies (Sun Yongxiang, 1999; Yuang Guoliang, 2000; Wu Sukun, 1998) on performance of public companies from several aspects. The practice of public companies indicates that mergers have direct and significant influence to performance. This study researches on post-merger performance.

Post-merger performance often was tested by changes of shareholders' wealth. Abnormal Returns Methodology is the most widely used:

$$AR = R - ER$$

Where AR is abnormal return, R is the returns during thing windows (period between sometime before merger announcement and after merger announcement) and ER is the sum of returns of merging and merged companies if there were no mergers.

In this model, R is computed by measuring changes of stock price and payment of dividend. Market Model Method is applied to compute ER.

Many western researchers made positive research on performance of merging and merged companies by this method, and drew similar results. They conclude that shareholders of merged companies always gain from merging (Jensen and Ruback, 1983; Schuert, 1998). See Table 1.

Table 1
Abnormal percentage stock price changes associated
with successful corporate takeovers.[a]

Technique	Takeover (%)	Target	Bidders (%)	s
Tender offers	30		4	
Mergers	20		0	
Proxy Contests	8		n.a.[b]	

[a] Abnormal price changes are price changes adjusted
to eliminate the effects of market-wide price changes.
[b] Not applicable.
(From: Jesen, M. T. & Rubake, R. S. (1983). The market of corporate control: the scientific evidence.)

Although ARM is widely adopted in the measurement of post-merger performance, the applicability of the method is affected by some factors. One of the important points is whether the stock market is efficient. If the answer is no, the change of stock price does not represent the change of the wealth of corporations. Although some researchers argue that Chinese stock market is weakly efficient, but Wu Shinong (1996) doubted this argument.

The other method to measure performance change is analyzing financial and accounting data. The positive research by Chen Xiao (1999) showed that the income information of Chinese public companies is strongly informative. Any income strategies are short-term and performance will be reflected in financial reports given an enough long period. This study uses this method to test changes of performance after takeovers.

The remainder of this paper is structured as follows. First, the sample selection is examined, and the methodology is developed. The methodology is followed by analyses and the results of empirical testing of different aspects of post-merger performance in Chinese public companies. The paper closes with a discussion of the results and conclusions.

2. Sample Selection and Methodology

2.1 Sample Selection
201 takeovers were selected from 1995 to 1998 in Chinese stock market. Table 2 shows the takeovers in each year from 1995 to 1998.

Table 2 Takeovers in each year

Year	1995	1996	1997	1998	Total
Takeovers	11	14	51	125	201

(If a firm involved in more than one takeover in a year, we only selected one; if the more than one takeovers happened in different years, they were counted separately.)

The data of takeover finish are named as the divided line, since the influence of takeovers to performance generally happened after the takeovers complete. In the Market Model Method, the dates of takeovers announcement are named as the divided line, since the reaction of stock market to takeovers happens on announcement date or even before the date.

2.2 The Design of Model

The factors used to measure performance of public companies are numerous. Four factors are selected in this paper:

G1: Main operation income/Total assets

G2: Net income/Total assets

G3: Income Per Share

G4: Net income/Net assets

As different industries' performance and growth rate are not similar, the influence of industry differences to the factors should be reduced. Reducing G1, G2, G3 and G4 by the average level of different industries, we got four new factors g1, g2, g3 and g4, which are influenced less by industry differences. Suppose AIG1, AIG2, AIG3 and AIG4 are average G1, G2, G3 and G4 for the industry that the merging company is in. Then g1 = G1-AIG1, g2= G2-AIG2, g3 = G3-AIG3 and g4 = G4-AIG4.

A general function must be designed in order to compare performance before and after takeovers. Factor Analysis Methodology is an ideal method to make general evaluation. The function was designed as follows:

$$F_i = \alpha_{i1}Y_{i1} + \alpha_{i2}Y_{i2} + \alpha_{i3}Y_{i3} + \alpha_{i4}Y_{i4}$$

where F_i is the general score of performance of firm i; α_{ij} is the percentage of importance for factor j in company i and Y_{ij} is the score of factor j in company i.

3. Model Estimates and Result Analysis

3.1 Computing of general scores

The "Basic Analysis of Chinese Listed Companies" published by Chinese Chengxin Stock Rationing Company is used to gather date used in the current study. The general score functions (201 firms are in the sample for the first three functions, 76 for the forth and 25 for the fifth.) are as follows:

The year before takeover:

$$F_i^{-1} = 0.53672\ Y_{i1} + 0.25719\ Y_{i2} + 0.15814\ Y_{i3} + 0.04795\ Y_{i4}$$

The year of takeover:

$$F_i^0 = 0.43782\ Y_{i1} + 0.24842\ Y_{i2} + 0.23195\ Y_{i3} + 0.08181\ Y_{i4}$$

The first year after takeover

$$F_i^1 = 0.65529\ Y_{i1} + 0.24348\ Y_{i2} + 0.06366\ Y_{i3} + 0.03757\ Y_{i4}$$

The second year after takeover

$$F_i^2 = 0.63688\ Y_{i1} + 0.23613\ Y_{i2} + 0.09711\ Y_{i3} + 0.02988\ Y_{i4}$$

The third year after takeover

$$F_i^3 = 0.66703\ Y_{i1} + 0.21369\ Y_{i2} + 0.11488\ Y_{i3} + 0.00440\ Y_{i4}$$

The general scores for each company's performance before and after takeovers are computed according to the five functions. The sample firms are tested according to the general score differences.

The results of average test and ratio test are presented in Table 3.

Table 3 the results of average test and ratio test

F differences	F^0-F^{-1}	F^1-F^0	F^1-F^{-1}	F^2-F^1	F^2-F^{-1}	F^3-F^2	F^3-F^{-1}
Sample (n)	201	201	201	76	76	25	25
Average*	-0.001	0.130	0.128	-0.051	0.129	-0.189	0.079
	(-0.012)	(2.478)[c]	(1.837)[b]	(-0.827)	(1.423)[a]	(-1.318)	(0.239)
Positive F differences ratio**	0.473	0.557	0.582	0.447	0.553	0.440	0.600
	(-0.776)	(2.323)[b]	(2.328)[b]	(-0.918)	(0.918)	(-0.600)	(1.000)

F^{-1}, F^0, F^1, F^2 and F^3 are general scores of performance in the year before takeover, the year of takeover, the first year after takeover, the second year after takeover and the third year after takeover respectively.

Positive F differences ratio is the ratio of the firms whose F differences are positive to the number of all the films in the sample.

* and **: the numbers in parentheses are t-statistic and z-statistic results.

[a] Significant at the 0.01 level, two-tailed test.

[b] Significant at the 0.05 level, two-tailed test.

[c] Significant at the 0.01 level, two-tailed test.

From Table 2, we can see that the performance in the year of takeovers did not change much. This may caused by most takeovers taking near the end of the year. The test also shows that the performance is increases since the second year after takeovers. Jensen and Ruback (1983) found that the abnormal returns of merging companies declined yearly from 1960s' to 1980s' and abnormal returns are even negative in 1980s'. In 1980s', takeovers often take the form of auction, which increases the merging cost and decreases the income of the merging companies. In China, however, the cooperate control market is not very competitive, which may be favorable to bidding companies.

Although our research is restricted by sample period, we still get some useful information. Table 2 shows that the average of F^1-F^0, F^2-F^1, F^3-F^2 are 0.130, -0.051 and -0.189 respectively, which indicates that the performance is inclined to decrease since the second year after takeovers. The average of F^3-F^{-1} is 0.079 and does not have high significance, which indicates that the conformities after takeovers are not successful.

3.2 The influence of Equity Structure to Post-merger Performance

The research of equity to performance often concentrated on inside and outside control mechanism and equity concentration ratio in western countries. In China, however, the proposition of shares employees held is small and not big enough to affect the whole equity structure. In Chinese public companies, there are both flowing shares and non-flowing shares. Corporate shares and state-owned shares account for most of non-flowing shares. Thus, the research of influence of equity structure to post-merger performance includes much more aspects.

The relationship between the proposition of shares the biggest shareholder held and post-merger performance is examined first. Table 4 shows the regression results of proposition held by biggest shareholders and general score difference of performance.

Table 4 Regression Results of Biggest Proposition and General Score Difference

Variables	Parameter Estimate	R^2	D-W test results
F^0-F^{-1}	0.585 (1.991)[b]	0.036	2.390
F^1-F^0	0.081 (0.467)	0.005	2.114
F^1-F^{-1}	0.599 (1.437)	0.025	2.018
F^2-F^1	-0.172 (-0.613)	0.006	2.439
F^2-F^{-1}	0.263 (1.223)	0.011	2.021
F^3-F^2	-0.089 (-0.166)	0.009	2.227
F^3-F^{-1}	0.248(0.743)	0.013	1.984

* the numbers in parentheses are t statistics.

[b] Significant at the 0.05 level.

The regression results in Table 3 indicate that the percentage of shares held by the biggest shareholders is positively significant related to F^0-F^{-1}, but is not positively significant related to the years after takeovers. The reasons may be as follows: First, the bigger the percentage of shares held by the biggest shareholders, the easier to control takeovers and financial reports by firms. Some public companies manipulate performance by mergers to gain the qualification of rationing shares[1]. The main motive of the mergers is not long-term performance but short-term performance change, so the change usually only reflect in the year of takeovers. Second, some government sections manipulate takeovers. Many Chinese public companies' biggest shareholders are the state. The bigger the percentage of shares the state owned the easier the government to manipulate the takeovers. Some government sections sold enterprises or assets with better performance to public companies. But since the operation mechanism did not change in public companies, these actions only relieve the difficulty in a short period and can not change performance in a long run.

In the 201 sample firms, 106 firms' biggest-percentage shares are state-owned, 92 are corporate-owned and the other 3 are the flowing shares. In the 76 firms that involved in takeovers before 1997, 45 firms' biggest-percentage shares are state-owned, the other 31 are corporate-owned. If there are differences between performance of state-owned shares accounted for the most part and those in which the corporate-owned or the flowing shares accounted for the most part are tested by Wilcoxon signed rank test. The test results are shown in Table 5.

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[1] According to the prescription of *the China's Securities Regulatory Commission*, only when a firm's income is positive in three consecutive years, can it have the qualification of rationing shares.

The results in Table 4 indicate that in the first year after takeovers, the performance of the firms which state-owned shares account for the most part is better than the performance of the firms in other equity structure at least in the 10% significant level. However, in the second year after takeovers, this advantage is lost and there are no significant differences between the two kinds of firms. This indicates that although government can help public companies by providing them with better resources through takeovers, but this action will not solve problems public companies confront in the long run.

Table 5 Wilcoxon test of Equity Structure

	F^0-F^{-1}	F^1-F^0	F^1-F^{-1}	F^2-F^1	F^2-F^{-1}
N_1	95	95	95	31	31
N_2	106	106	106	45	45
R_1	9454	9051	8882	1279	1231
Z statistics	-0.343	-1.32	-1.732[a]	0.740	0.233

N_1 and N_2 are the number of firms that the biggest shareholders are state and the firms that the biggest percentage of shares are corporate shares or flowing shares in the sample.

R_1 is the difference of signed rank of factor scores before and after merger of firms that corporate shares account for the most part.

[a] Significant at the 0.01 level.

4. **Conclusion**

This paper has attempted to investigate post-acquisition operation performance by reported financial and accounting data in Chinese stock market. The overall conclusions are as follows.

First, in the year of the takeovers and the first year after takeovers, the performance of merging firms increases in general, but in the following years, it decreases. In the third year after the takeovers, the average of F^2-F^{-1} is positive, but the significant level is low.

Second, the proportion of shares held by the biggest shareholders is positively related to the performance in the year of takeovers, but the relationship between the percentage and the performance in the long run is not evident.

Third, the performance of firms which state-owned shares account for the most part are better than the firms in other equity structure in short term, but there are no significant differences between the two kinds of firms in the long run.

Overall, the paper researches on several aspects of post-merger performance and drew some conclusion not consistent with the research results by western researchers. This may caused by the specialties of Chinese special growing stock market.

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